16. Bering Sea and Aleutian Islands Squids and Other Species

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Executive Summary

Summary of Major Changes

Changes in the input data:

1. Total catch weight for BSAI squids, sharks, skates, sculpins, and octopi is updated with 2004 and partial 2005 data. Methods for estimating catch by species were incorporated for sculpins, where catch data are estimated for the following genera: *Hemilepidotus, Myoxocephalus, Hemitripterus.*
2. Survey biomass results for BSAI sharks, skates, and sculpins are updated with 2005 results.
3. Length frequencies of the 5 most abundant sculpin species are presented from AFSC survey data of the EBS shelf and the 3 most abundant species of the AI.
4. Information on the position of squid, sharks, skates, sculpins, and octopi within the BSAI ecosystem are included.

Changes in assessment methodology:

This year, the assessment is formatted into stand-alone sub-sections using the required SAFE format for ease of reading and to support more effective management of BSAI squids sharks, skates, sculpins, and octopi. This executive summary gives major results from each assessment for the Other species complex.

Changes in assessment results (from the executive summaries of each assessment):

16.1 Squids: no changes to past recommendations. The recommended ABC for squid in the year 2006 is calculated as 0.75 times the average catch from 1978-1995, or **1,970 mt**; the recommended overfishing level for squid in the year 2006 is calculated as the average catch from 1978-1995, or **2,624 mt**. The rationale for a Tier 6-based ABC recommendation is that there is no reliable biomass estimate for squid.

16.2 Sharks: The Shark SAFE appendix from last year was split into separate chapters for the Bering Sea/Aleutian Islands (BSAI) and Gulf of Alaska (GOA); BSAI results are reported here. Historical BSAI survey catches of Pacific sleeper sharks are rare, and abundance trends from the surveys are unreliable as evidenced by the high uncertainty in the biomass estimates. The new EBS slope bottom trawl survey (2002 and 2004) showed a substantial biomass of Pacific sleeper sharks on the EBS slope in 2002 (25,445 mt) but not in 2004 (2,260 mt). Consequently, biomass estimates from this survey vary widely for Pacific sleeper sharks from year to year. Spiny dogfish and salmon sharks are rarely encountered in commercial fisheries or bottom trawl surveys in the BSAI. Consequently, major populations of spiny dogfish and salmon sharks are not likely to be affected by commercial fisheries in the BSAI.

Average Pacific sleeper shark incidental catch (1979 – 2005) / average Pacific sleeper shark survey biomass (1996 – 2005) was 0.02. A natural mortality estimate does not exist for Pacific sleeper sharks. However, unless Pacific sleeper sharks are extremely long lived, a 2% reduction in biomass per year due to fishing mortality is likely less than or near the natural mortality rate for Pacific sleeper sharks. Based

upon this risk criterion, Pacific sleeper sharks do not appear to be at risk of overfishing at current levels of incidental catch. There does appear to be an increasing trend in bycatch of Pacific sleeper sharks over the years 1997 – 2005 in the BSAI statistical areas 521 and 517. Either Pacific sleeper shark biomass is increasing in these regions or the fishery is catching a higher proportion of Pacific sleeper shark biomass each year.

	Approximate Tier 6 Calculations (mt)
ABC	414
OFL	552

16.3 Skates: This year, we recommend applying Tier 5 criteria to the EBS skate complex and the AI skate complex separately, using the default natural mortality rate of M=0.10 and the average of skate complex biomass estimates for each area using surveys since 1996 (past 10 years). Therefore, we recommend:

	EBS skates	**AI skates**
1996-2005 avg survey biomass (t)	455,881	36,392
M	0.10	0.10
ABC	34,191	2,729
OFL	45,588	3,639

16.4 Sculpins: Authors recommend splitting the BSAI sculpin complex into a Bering Sea assemblage and an Aleutian Island assemblage. Therefore, we suggest separate ABC and OFL for each region (BSAI ABC and OFL given for comparison).

Region	**M**	**Exploitable biomass (mt)**	**F_{ABC}**	**ABC (mt)**	**F_{OFL}**	**OFL (mt)**
BSAI	0.19	206,882	0.1425	29,481	0.19	39,307
EBS	0.19	192,446	0.1425	27,423	0.19	36,565
AI	0.19	14,436	0.1425	2,057	0.19	2,743

16.5 Octopus: The current data are not sufficient for any model-based assessment. The Bering Sea and Aleutian Island trawl surveys produce estimates of biomass for octopus, but these estimates are highly variable and may not reflect the same species and sizes of octopus caught by industry. As an example of how this species complex might be managed under catch quotas, we have estimated Tier 6 and Tier 5 catch limits from available data. The long-term average estimated incidental catch rate (including discards) for 1992-2005 is 352 mt. We feel a Tier 6 approach would result in an overly conservative limit, because these data are from a period in which there was very little market or directed effort for octopus. If the most recent 10-year average of bottom trawl survey biomass (BS shelf + BS slope + AI) of 7,000 tons and a conservative estimate of M=0.53 are used, **Tier 5 OFL and ABC levels would be 3,710 and 2,782 tons, respectively. If only the biomass from the Bering Sea shelf survey were used, then the estimated Tier 5 OFL and ABC would be 1,941 and 1,456, respectively.** An additional option is to completely prohibit directed fishing for octopus in federal waters by placing the species complex on bycatch-only status, which sets a maximum retainable allowance (MRA) of the catch of target species.

Responses to SSC Comments

SSC comments specific to the BSAI Squid and Other species assessment:
Specific comments about squid, sharks, skates, sculpins and octopi are reviewed in each section.

SSC comments on assessments in general:
From the December, 2004 SSC minutes: *In its review of the SAFE chapter, the SSC noted that there is variation in the information presented. Several years ago, the SSC developed a list of items that should be included in the document. The SSC requests that stock assessment authors exert more effort to address each item contained in the list. Items contained in the list are considered critical to the SSC's ability to formulate advice to the Council. The SSC will review the contents of this list at its February meeting.*

This year, Ecosystem Considerations sections for BSAI squid, EBS and AI skates and sculpins, and BSAI octopi were added. All other required SAFE sections have been addressed to the appropriate extent given the current lack of assessment information and fishery interest in BSAI squids and other species.

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